

## Attachment 128

### Occupational Blood Serum, Sampling

During a 6-day plant scale R&D test involving PMN substance P-08-509, occupational blood serum samples were collected for the purpose of assessing the effectiveness of industrial hygiene controls and further evaluating potential biopersistence. This plant scale R&D test was conducted at the DuPont Washington Works facility in West Virginia.

More specifically, blood serum samples were collected from 12 employees at the DuPont Washington Works facility who volunteered for testing. Of the 12 employees who were tested, one employee (Worker ID 1) was involved with research on the PMN substance and other potential alternatives for PFOA.<sup>1</sup> The remaining 11 employees worked various shifts for the plant scale R&D test. Of these 11 employees, 1 employee (Worker ID 2) was not an operator during the test, while the remaining 10 employees were operators during the test. Personal protective equipment (PPE) worn by the operators during the test is consistent with that described on PMN P-08-509 page numbers 109, 110, and 117-119.

Serum samples were analyzed for 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionate anion and results are reported below, in Table 1, as the ammonium salt form [P-08-509]. Please note that this analysis does not differentiate whether the anion originates from the acid form [P-08-508] or the salt form [P-08-509]. The analytical method used was acetonitrile protein precipitation followed by LC/MS/MS.<sup>2</sup> Analysis was conducted by DuPont Haskell Global Centers for Health and Environmental Sciences, Newark, Delaware.

Serum samples were to be collected in 3 draws, as described below.

- 1<sup>st</sup> Draw:** 1st Draw samples were taken prior to the start of the plant scale R&D test to establish a baseline.
- 2<sup>nd</sup> Draw:** 2<sup>nd</sup> Draw samples were to be taken during the last shift worked by the employee during the plant scale R&D test.
- 3<sup>rd</sup> Draw:** 3<sup>rd</sup> Draw samples were to be taken 54 to 66 hours after the 2<sup>nd</sup> Draw sample was taken, where possible.

The actual time between draws is provided in Table 1 below.

A 4<sup>th</sup> Draw sample was taken for the one employee having a 3<sup>rd</sup> Draw sample result above the quantification limit. This sample, taken 550 hours after the 3<sup>rd</sup> Draw sample, was non-detect.

---

<sup>1</sup> This employee was not involved in the plant scale R&D test. Testing was conducted per request of the employee.

<sup>2</sup> See Document 1, attached, for details on the analytical method.

Attachment 128 (continued)Table 1**Occupational Blood Serum Sample Results  
Reported as PMN Substance P-08-509**

[Worker ID]	[1 <sup>st</sup> Draw (ng/ml)]	[2 <sup>nd</sup> Draw (ng/ml)]	[Time between 1 <sup>st</sup> & 2 <sup>nd</sup> Draw (hrs)]	[3 <sup>rd</sup> Draw (ng/ml)]	[Time between 2 <sup>nd</sup> & 3 <sup>rd</sup> Draw (hrs)]	[4 <sup>th</sup> Draw (ng/ml)]	[Time between 3 <sup>rd</sup> & 4 <sup>th</sup> Draw (hrs)]
1	<1	No test	-	No test	-	No test	-
2	ND	<1	93.5	<1	65	No test	-
3	ND	ND	48.5	No test	-	No test	-
4	ND	ND	83	No test	-	No test	-
5	ND	<1	95.5	ND	68	No test	-
6	ND	ND	83	No test	-	No test	-
7	ND	2	82.5	2	63	ND	550
8	ND	ND	94	No test	-	No test	-
9	ND	<1	12	ND	26	No test	-
10	ND	ND	12	No test	-	No test	-
11	ND	<1	11	ND	60	No test	-
12	<1	<1	60	<1	56	No test	-

ND = not detected, with a detection limit of approximately [0.3 ng/ml]

<1 = detected but not quantifiable, with a quantification limit of [1 ng/ml]

No test = a sample was not received for analysis

Analysis was conducted by DuPont Haskell Global Centers for Health and Environmental Sciences, Newark, DE

Analytical method was acetonitrile protein precipitation followed by LC/MS/MS

[Hours between draws are rounded to the nearest half-hour]

Attachment 128 (continued)

## Document 1

Analytical Method – LC/MS/MS

2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionate anion

HPLC Instrument: Agilent Model 1200

MS Instrument: Applied Biosystems API 4000

*LC Parameters:*

Column: Zorbax RX-C8; 150 x 2.1 mm with 5 micron particle size

Mobile Phase: A: 0.15% acetic acid and 0.15% triethyl amine in HPLC grade water

B: 0.15% acetic acid and 0.15% triethyl amine in acetonitrile

Column Temperature: 35 °C

Injection Volume: 10.0 µL

*MS Parameters:*

Ion Source: Turbo Spray, Negative Ion

Temperature (TEM): 450

Dwell 300 msec

Curtain Gas Flow (CUR): 50.0

GS1: 11

GS2: 70

IonSpray (IS) Voltage: -4500

CAD 10.0

EP -10.0

Quadrupole Resolution: Quad. 1: Unit

Quad. 3: Unit

MRM Settings	Q1 Mass	Q3 Mass	DP	CE	CXP
	329.00	285.00	-20	-10	-5

**HPLC Gradient Step Total Time Flow Rate**

	(min)	(uL/min)	A(%)	B(%)
0	0.00	250	60.0	40.0
1	5.00	250	60.0	40.0
2	5.01	350	10.0	90.0
3	9.00	350	10.0	90.0
4	9.01	350	60.0	40.0
5	19.00	350	60.0	40.0
5	19.01	250	60.0	40.0
5	20.00	250	60.0	40.0